March 7, 2003

John L. Gross, Ph.D., P.E.
Leader, Structures Group
National Institute of Standards and Technology
100 Bureau Drive, Stop 8611
Gaithersburg, MD 20899-8611

Re: Confidential and Pre-decisional Communication – Questions on Fire Resistance of the WTC Floor System

Dear John:

Following are the Port Authority (PA) responses to your questions:

Questions to the Port Authority of New York & New Jersey, February 26, 2003

1. In a letter from ERS (Julian Roth) to PoNYA (Malcolm Levy) dated December 14, 1965, it had apparently been decided that the fire protection of the WTC floor system would involve "the use of a maximum thickness of one inch spray-on fireproofing material around the individual components of the floor trusses." It was further stated that "one inch material meets the 3-hour requirements of both the new code (New York City Building Code under revision in 1965 and ultimately published in 1968) and Underwriter's (Underwriter Laboratories, Inc.) using previously approved assemblies tested by the 'load criteria' method but ignoring the more stringent time-temperature-rate-of-rise criteria which is an alternate testing procedure not required by the new code or by Underwriter's, and which we do not consider necessary."

   In a follow-up letter from ERS (Julian Roth) to PoNYA (Malcolm Levy) dated December 22, 1965, the PA is advised that "advance information from manufacturers indicates that if the truss were required to be fire-tested, then two inches of material would be required for light angle members."

   In a letter from ERS (Harry Harman) to PoNYA (Malcolm Levy) dated July 25, 1966, it is stated "Obviously, with so many penetrations of the floor system [4" concrete slab over a metal deck] the fire rating of the floor construction is of an indeterminate value unless tested."

   1) Were tests performed on the fire resistance of the composite floor system during the design or construction phase of the project?

   PA Response: **There are no test records in our files.**

2. In a letter dated October 30, 1969, from PoNYA (Robert Linn) to Mario & DiBono Plastering Co., Inc, the contractor is directed as follows: "bar joists requiring spray-on fireproofing are to have 1/2" covering of 'Cafco'."

   2) Was ½ inch of Cafco Type-D fireproofing specified for the floor trusses requiring spray-on fireproofing?

   PA Response: **Thickness was not specified on the drawings. PA is still trying to locate the original specifications, which NIST is aware of. The letters you reference and quote in your questions are snapshots in time. The culmination of these written exchanges led to what was finally called for in the original specifications that were part of the contract documents. In the absence of the original specifications, we must rely on the actual measured thickness of the fireproofing. Over the years, this has been documented to be a nominal ¾ inches.**

   It should be kept in mind that the fireproofing determinations were made in the context of buildings that were to be constructed without a sprinkler system. Following the enactment of Local Law 5 in New York City, a complete sprinkler system was added to the towers over a period of years, thus reducing the overall reliance on the truss joist fireproofing for fire protection.

3. In a report by SHCR prepared for the PANYNJ dealing with "the fire safety of specific facets of the twin towers of the World Trade Center" following the 1975 fire, it is stated that the 4 inch slab exceeds the commonly used (and therefore accepted by the NYC Building Dept.) 3-1/4 inch slab on metal deck without fireproofing.

   3) Was the underside of the floor slab (metal deck) fireproofed?

   PA Response: **No.**

4. In this same report by SHCR prepared for the PANYNJ, it is stated that, fireproofing of the top chord of the floor trusses is not necessary (except for the two-way portion of the floor). Additionally, it is stated that fireproofing of the bridging system is not required.

   4a) In the one-way portions of the floor system, were the top chords of the composite floor trusses fireproofed?

   PA Response: **Yes.**

   4b) In the one-way portions of the floor system, were the bridging trusses fireproofed?

PA Response: **Yes.**

5. It is our understanding that initially the spray-on fireproofing contained asbestos. We also understand that, at some point, asbestos was not permitted and a Cafco product that contained mineral wool instead of asbestos was substituted.

   5a) Is the situation stated here correct?

   PA Response: **Yes.**

   If so,

   5b) What floors of which towers were fireproofed with the asbestos-containing product?

   PA Response: **For the tower floor system, only steel trusses in Zone 1(44th floor and below) in Tower 1 were fireproofed with asbestos containing product.**

   5c) Was the asbestos-containing "fireproofing" removed?

   PA Response: **Yes.**

I hope these responses are helpful. If you have any further questions please send them to us.

Sincerely,

o/s/b

Joseph M. Englot, P.E.
Asst. Chief Engineer/Design

CC: F. Lombardi

702-P

Cheri Sawyer

From: Shyam Sunder [sunder@nist.gov]
Sent: Thursday, November 20, 2003 8:48 AM
To: melissa.lieberman@nist.gov
Cc: mrubin@nist.gov; cauffman@nist.gov; john.eichner@nist.gov; cheri.sawyer@nist.gov
Subject: Fwd: RE: Fire resistance of the WTC floor system

Melissa,

FYI, here's the "written interrogatory" that is referred to in the public update.

Shyam

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X-Sieve: CMU Sieve 2.2
X-Sender: jgross@mailserver.nist.gov
X-Mailer: QUALCOMM Windows Eudora Version 5.1
Date: Fri, 07 Mar 2003 16:51:42 -0500
To: sivaraj.shyam-sunder@nist.gov, monica.starnes@nist.gov
From: "John L. Gross" <jgross@nist.gov>
Subject: Fwd: RE: Fire resistance of the WTC floor system

Shyam and Monica,

Here is the Port Authority's response to our questions regarding fire proofing. I am disappointed in the answer to question 2. I believe we have a copy of the fire proofing specification and it does not give the thicknesses. The "nominal thickness" is not the specified minimum. Also, the affirmative answers to questions 4a) and 4b) are inconsistent with Skilling's report following the 1975 fire. Perhaps we can get photo evidence from LERA's slide set.

John

X-Sieve: CMU Sieve 2.2
From: "Englot, Joseph" <jenglot@panynj.gov>
To: "'John L. Gross'" <jgross@nist.gov>
Cc: "Begley, James" <jbegley@panynj.gov>,
"Lombardi, Frank"
<flombard@panynj.gov>
Subject: RE: Fire resistance of the WTC floor system
Date: Fri, 7 Mar 2003 15:48:03 -0500
X-Mailer: Internet Mail Service (5.5.2653.19)

Dear John:

The attached letter (Word file) contains our response to your questions. I will send a hard copy out today.

Regards,

Joe

Joseph M. Englot, P.E.

Asst. Chief Engineer/Design

Engineering/Architecture Design Division

Engineering Department

973-792-4324

-----Original Message-----
From: John L. Gross [mailto:jgross@nist.gov]
Sent: Thursday, February 27, 2003 12:21 PM
To: Englot, Joseph
Cc: sivaraj.shyam-sunder@nist.gov; monica.starnes@nist.gov
Subject: Fire resistance of the WTC floor system

Dear Joe:

NIST has been reviewing the documents provided by the Port Authority of New York & New Jersey related to fire resistance of the floor system used in the WTC towers. Based on this review, we have several questions for which we would like an early response from the Port Authority to confirm our understanding of the facts contained in the documents.

The attached list contains five questions, some with several parts, that we would like the Port Authority to address. Most of the responses require only a simple "yes" or "no" answer. We appreciate receiving your written response by March 7, 2003. If there is any reason that you cannot respond by March 7th, please let me know right away.

Thank you in advance for your attention.

Regards,
John

CONFIDENTIAL AND PRE-DECISIONAL COMMUNICATION

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